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gist, four zoölogists, two ornithologists, two paleontologists, one anatomist, one botanist—ten out of the seventeen from the biological group—and four physicists. The individuals chosen and the authors of the essays are as follows:

Benjamin Thompson, Count Rumford, Physicist. By Edwin E. Slosson.
Alexander Wilson, Ornithologist. By Witmer Stone.
John James Audubon, Ornithologist. By Witmer Stone.
Benjamin Silliman, Chemist. By Daniel Coit Gilman.
Joseph Henry, Physicist. By Simon Newcomb.
Louis Agassiz, Zoölogist. By Charles Frederick Holder.
Jeffries Wyman, Anatomist. By Burt G. Wilder.
Asa Gray, Botanist. By John M. Coulter.
James Dwight Dana, Geologist. By William North Rice.
Spencer Fullerton Baird, Zoölogist. By Charles Frederick Holder.
Othniel Charles Marsh, Paleontologist. By George Bird Grinnell.
Edward Drinker Cope, Paleontologist. By Marcus Benjamin.
Josiah Willard Gibbs, Physicist. By Edwin E. Slosson.
Simon Newcomb, Astronomer. By Marcus Benjamin.
George Brown Goode, Zoölogist. By David Starr Jordan.
Henry Augustus Rowland, Physicist. By Ira Remsen.
William Keith Brooks, Zoölogist. By E. A. Andrews.

Students of geology will be most interested in the lives of Dana, Marsh, and Cope, the leading events of whose fruitful scientific careers are clearly set forth.

R. T. C.

Geology and Ore Deposits of Republic Mining District. By JOSEPH B. UMPLEBY. Washington Geological Survey, Bulletin No. 1. Pp. 65; figs 5; pl. 13. Olympia, 1910.

Physiographically the Republic mining district in northeastern Washington appears to be an extension of the Interior Plateau of British Columbia and to be allied in Tertiary history with it. At the same time it seems to belong to a different physiographic unit from the central Cascades.

The oldest rocks exposed in the Republic district are metamorphic, and are provisionally assigned to the Carboniferous. In early or middle Mesozoic times there occurred great batholithic intrusions of granodiorite. Following these came a great period of erosion lasting until the middle of the Tertiary. During this time there was developed an Eocene peneplain which was lifted and trenched before the end of the Oligocene. The rocks next in order are dacite flows of Oligocene age. The remaining Tertiary history is written in several periods of igneous activity—andesite flows, intrusive latite porphyries, and a basaltic eruption during the Pleistocene.

The total bullion production of the camp since the first discovery of ore in 1896 has been about $2,000,000, of which approximately 90 per cent has been gold and the remainder silver. The veins are thought to be genetically related to the latite porphyry intrusion and are made up of quartz, chalcedony, opal, calcite, and adularia, carrying inconspicuous amounts of pyrite and possibly gold, in association with antimony, sulphur, and selenium.

Though the deposits at Republic are not altogether like any others known in the United States, they most closely resemble the lodes of the Great Basin province. Their striking feature is the great amount of selenium in the ores, and they are thus best correlated with Tonopah and Goldfield, the only other camps in the United States known to produce selenium ores.

The report closes with a detailed description of the principal mines of the district, of which the New Republic mine is easily the leader.

R. T. C.

Notes on Explosive Mine Gases and Dusts with Special Reference to Explosions in the Monongah, Darr, and Naomi Coal Mines. By ROLLIN THOMAS CHAMBERLIN. U.S. Geol. Surv. Bulletin 383.

The results of a series of experiments carried out by the author throw new light on the nature of the explosive material and on the conditions governing explosions in coal mines, and should be of great practical, as well as scientific, value. As soon as possible after the explosions in the mines mentioned, samples of the mine atmosphere were collected and analyzed. Another series of experiments was carried out to determine the probable condition of the gas in the coal, whether (1) imprisoned in minute cavities, (2) occluded or dissolved in the substance of the coal, or (3) the result of slowly operating chemical processes. This was done by studying the rate of liberation of gas (1) from coal bottled in vacuum, (2) from crushing the coal, and (3) from heating the coal. A careful study was also made of the position and nature of the dust in passage-ways and on timbers in the mines after the explosions.